May 24, 1960 E. O. SODERBERG 2,937,897

BACKSET LINK FOR LOCK SETS

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FIG. 1.

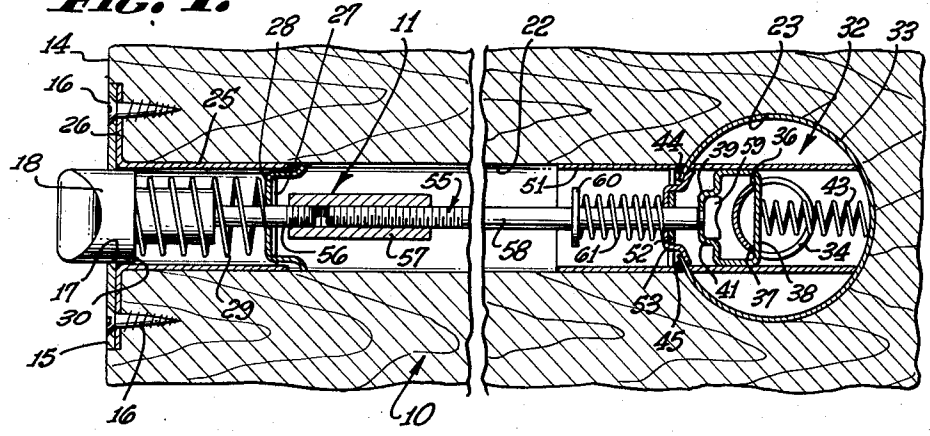


FIG. 2.

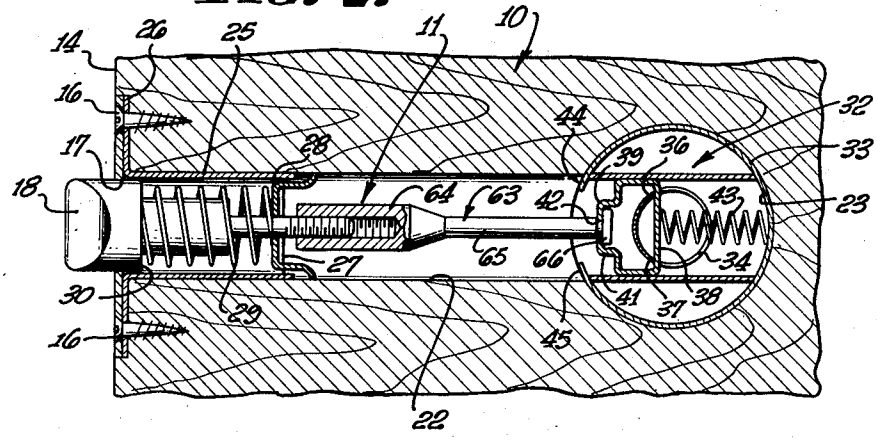


FIG. 3.

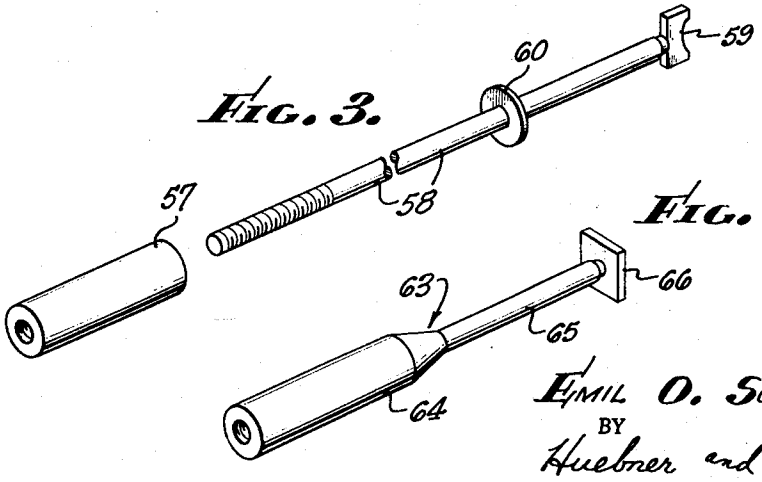


FIG. 4.

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FIG. 5.

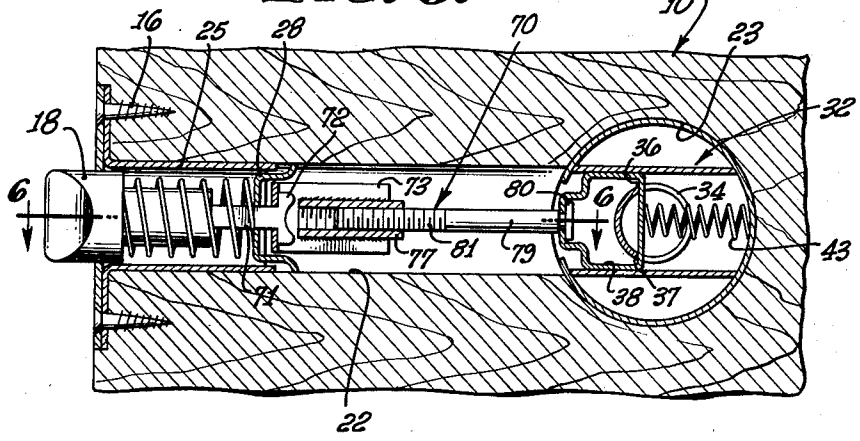


FIG. 6.

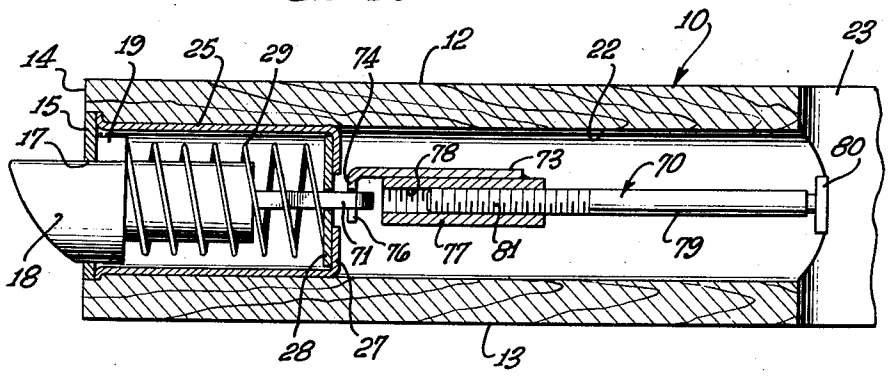
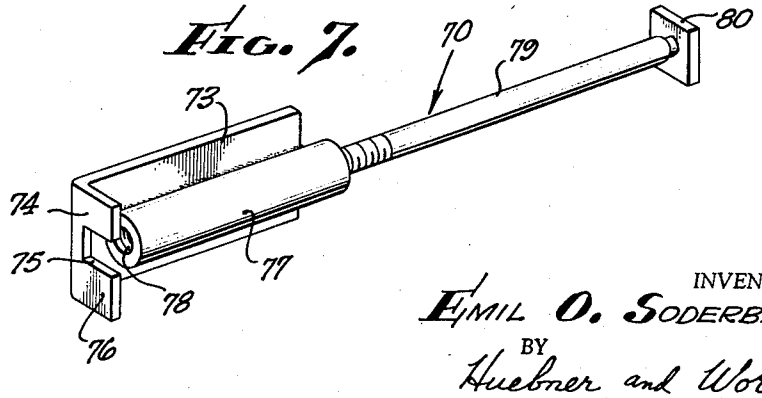


FIG. 7.



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BACKSET LINK FOR LOCK SETS

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3 Claims. (Cl. 292—1)

This invention relates to lock sets and more particularly to a backset link for interconnecting an actuating member, e.g. door knob, and a latch bolt of the lock set.

Backset links of the general type to which this invention relates, for spacing the door knob from the latch bolt by a selected distance, have been proposed heretofore, as is disclosed, for example, in the patent to Ernest L. Schlage, No. 2,719,744, issued October 4, 1955. The lock set of said Letters Patent is designed to be installed in a door by arranging the latch bolt and link in a bore in the door and arranging the lock set actuating mechanism in a cross bore in the door to engage the link in the actuating mechanism. The link is extendable whereby it may be adjusted to accommodate any selected distance at which the actuating mechanism is to be spaced from the latch bolt.

When installing lock sets having an extendable backset link of the type produced heretofore, one must first adjust the backset link to a length which in his judgment will span the space between the latch bolt and the actuating mechanism, then position the latch bolt and the link in the door and then attempt to engage the inner end of the link with the actuating mechanism. Should the link be found not to have been adjusted to optimum length for engagement with the actuating mechanism, it is necessary to remove the acuating mechanism and the bolt and the link and to adjust the length of the link again, and, finally, by trial and error method the link will have been adjusted in length to extend to a position where it will become properly engaged by the actuating mechanism.

It is an object of this invention to provide a lock set having an improved backset link which is adapted to be adjusted to optimum length while positioned in the door thereby to dispense with the above mentioned trial and error method of installation.

A further object is to provide a backset link of the above mentioned character for a lock set which may be adjusted, while positioned in the door, in which the lock set is being installed, to a length at which the link will become properly engaged by the actuating mechanism of the lock set.

Another object is to provide a lock set of the above mentioned character which is simple in construction and of relatively low cost.

Further objects and advantages of this invention will appear during the course of the following part of this specification wherein the details of construction and mode of operation of several embodiments of the invention are described with reference to the accompanying drawing, in which:

Fig. 1 is a central vertical section through the lock portion of a door having a lock set of this invention installed therein;

Fig. 2 is a central vertical section through the lock portion of a door having another embodiment of the lock set of this invention therein;

Fig. 3 is an exploded view in perspective of parts of the backset link of the lock set shown in Fig. 1;

Fig. 4 is a perspective view of the operating part of the backset link of the lock set shown in Fig. 2;

Fig. 5 is a central vertical section through the lock portion of a door having a third embodiment of this invention;

Fig. 6 is a horizontal transverse section taken along line 6—6 of Fig. 5; and

Fig. 7 is a perspective view of the backset link of the lock set shown in Fig. 5.

Referring to the drawing in detail, in Fig. 1 there is shown a portion of a door 10 having a lock set 11 of this invention installed therein. For purposes of more clearly pointing out wherein this invention constitutes an improvement over prior lock sets, I have chosen to illustrate the lock set 11 as generally following the structure of that illustrated and described in the aforesaid Patent No. 2,719,744, but in combination with a backset link of this invention.

The door has panel surfaces 12 and 13 (see Fig. 6) and an end edge 14 herein referred to as the opening edge of the door. There is a face plate 15 secured in such opening edge as by means of screws 16. The plate 15 has an opening 17 formed therein for accommodating the latch bolt 18 of the lock set. The opening 17 is non-circular and, as shown in Fig. 6, the latch bolt 18 is of out-of-round cross section in that portion thereof which extends through the plate opening. The latch bolt also has a flange 19 which strikes the inside surface of the face plate 15 for limiting outward movement of the latch bolt through the plate opening.

The door has a horizontally extending bore 22 formed therein in alignment with the opening of the face plate. At its inner end the bore 22 opens into a cross bore 23 formed through the door and extending generally perpendicular to the bore 22.

The latch bolt is positioned in a tubular shell 25 having end flanges 26 flush with the inside surface of the face plate 15 whereby the shell is positioned in the bore 22 of the door and made secure by the screws 16. On the inside end of the shell are inwardly extending flanges 27 which position an end wall or clip 28 as shown. There is a coil spring 29 in the shell which bears at its inner end against the clip 28 and at its outer end against a shoulder 30 of the latch bolt thereby to urge the latch bolt in a direction out through the face plate opening to a position where the latch bolt flange 19 abuts the inside of the face plate.

Referring now to the actuating mechanism of the lock set, it is positioned in the cross bore 23 and is designated generally by reference numeral 32. Employing the language of said Patent No. 2,719,744, the actuating mechanism includes a housing 33 serving as a mounting for a rotary spindle 34 adapted to be actuated by any customary device such as a knob, or turn piece, or lever or key. The spindle is interrupted to afford a pair of cam surfaces 36 and 37, bearing against a follower 38 slidable within the housing 33 along the line of the axis of the bore 22. The follower 38 is formed to provide a pair of facing flanges 39 and 41 spaced apart to afford an intervening gap 42. A coil spring 43 interposed between the follower 38 and the housing 33 impels the spindle normally to assume an intermediate or neutral position as shown in Fig. 1. When the spindle is rotated in either direction, the follower 38 is moved toward the right in Fig. 1 and the spring 43 is compressed.

In the vicinity of the gap 42 the housing 33 is interrupted both in its periphery and in its lateral walls to afford a pair of facing and spaced apart lips 44 and 45.

There is a shell 51 designed to lie within the bore 22 of the door. One end of the shell is provided with a partly perforated head or end plate 52 in which a clip 53 is held in position. The periphery of the shell 51 and

the ends of the clip are shaped to serve as hooks. There is consequently provided an interengaging mechanism so that the housing **33** slides laterally into firm interconnection with the shell **51**.

For interconnecting the follower **38** of the actuating mechanism to the latch bolt, there is a backset link **55** embodying this invention. Its outer end is constituted of a stem **56** made integral with the latch bolt and extending through an opening in the end wall **28**. The inner end portion of the stem **56** is screw-threaded and receives an internally threaded collar **57**. There is another stem **58** threadably received at its outer end in the collar, while the inner end of the stem **58** has a head **59** engageable with the flanges **39** and **41** of the follower **38**.

Reference numeral **60** designates a stop or washer fixed on the stem for holding the outer end of a coil spring **61**. The inner end of the coil spring **61** contacts the end plate **52** thus to urge the head **59** of the backset link in a direction toward the latch bolt.

To install the lock set **11**, all of the parts thereof with the exception of the actuating mechanism **32** are first positioned in the bore **22** as shown, whereby the head **59** of the backset link extends into the cross bore **23** of the door. It is preferred that the collar **57** be made tight on the stem **56** as by turning the collar to the end of the screw threads of the stem **56** prior to inserting the latch bolt and the backset link into the door. As thus installed it will be obvious that the head **59** of the backset link is accessible through the cross bore **23** for rotating the head so that the stem **58** will be moved in a direction outwardly from or inwardly of the collar **56** to a selected position where the head **59** will be disposed for interengagement with the flanges **39** and **41** of the follower of the actuating mechanism upon insertion of the actuating mechanism into the cross bore **23**. Thus, by this invention, the prior art trial and error method of adjusting the overall length of the backset link prior to installing the same in the door is dispensed with, and now it is possible to adjust the backset link to optimum length while the same is positioned in the door where it will become engaged automatically by the actuating mechanism upon inserting the actuating mechanism into place. A person installing the lock sets of this invention need only have a supply of backset links of various standard lengths which may be installed in a particular door whatever the distance of the actuating member of the latch bolt may be.

Referring to Figs. 2 and 4, there is a member **63** which takes the place of the collar **57**, stem **58** and shell parts **51** and **53** of the embodiment shown in Fig. 1. The member **63** has a collar portion **64** integral with a stem portion **65** having an end head **66** of square configuration. In this embodiment, adjustment of the length of the backset link is affected by rotating the head **66** to shorten or lengthen the backset link through the screw-thread engagement of the collar portion **64** over the stem **56**.

In the embodiment of Figs. 5–7 there is shown a backset link **70** which is designed for use with a latch bolt identical with that shown in the aforesaid patent to Schlage, having a shank **71** and an enlarged T-shaped head **72**. The backset link **70** comprises a plate **73** bent to provide an end flange **74**. The flange is notched as at **75** to define two spaced apart jaws **76** which serve as hooks to engage the head **72** of the latch bolt. There is an internally screw-threaded nipple **77** welded or otherwise suitably secured to the inside of the plate **73**. The threaded bore **78** of the nipple is in axial alignment with the notch **75**. A bolt member **79** having a square head **80** at one end thereof for engagement with the actuating mechanism, and a threaded stem end **81** is threadably connected in the nipple whereby the length of the backset link may be adjusted in the manner described above.

While the instant invention has been shown and described herein, in what are conceived to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of the invention, which is therefore not to be limited to the details disclosed herein, but is to be accorded the full scope of the claims.

What I claim is:

1. In a lock set for a door having an opening edge, the lock set comprising a latch bolt and an actuating mechanism, the latch bolt having an inner end and being adapted to move non-rotatably and axially reciprocatively in a bore formed inwardly in the door from the opening edge thereof, the actuating mechanism being adapted to fit in a second bore formed in the door and intersecting the first bore, the combination with the latch bolt and actuating mechanism of a backset link consisting essentially of first and second threaded members releasably interconnected for longitudinal extension and retraction by rotation of the first threaded member, a single connecting element directly and non-rotatably interconnecting the second threaded member and the latch bolt, whereby the non-rotatable latch bolt functions to prevent rotation of the second threaded member by said direct interconnection, and engaging means on the first threaded member for releasably engaging the actuating mechanism.

2. The combination of claim 1 wherein the single connecting element is a stem extension of the second threaded member, the stem extension being secured directly and non-rotatably to the latch bolt.

3. The combination of claim 1 wherein the latch bolt is provided at its inner end with a T-shaped head and the single connecting element is a claw member extending from the second threaded member and arranged for releasable, non-rotatable attachment to the T-shaped head of the latch bolt.

References Cited in the file of this patent

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